

FIG. 1

	A	B	C	D	E	F	G	H
1	Customer Benefit Model							
2								
3								
4								
5	Files							
6	Project Name	052201e	Scenario #					
7	CBM Directory	C:\anRawies\Projects\CBM\laesthomas2						
8	CBM DE Directory	C:\anRawies\Projects\CBM\laesthomas2\So						
9	CBM Project Directory	C:\anRawies\Projects\CBM\laesthomas2\projects\052201d						
10	Simulation Directory	C:\program files\simulation2000						
11								
12								
13	Time to run Simulation (days)	1						
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

Workflow

Create Project

Shift Data

Line Configuration

Board Data

Create Simulation

Save and Exit

Build your project and set up the directory for experiments

FIG. 2

	W	X	Y	Z	AA	AB
1						
2						
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12						
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29						
30						
31						

C:\lanRawles\Projects\CBM\latest\thomas2
C:\lanRawles\Projects\CBM\latest\thomas2\So
C:\lanRawles\Projects\CBM\latest\thomas2\projects\052201d

FIG. 2A

				Name	Size	Type	Date & Time
<input checked="" type="checkbox"/> Desktop				<input type="checkbox"/> 1			
<input checked="" type="checkbox"/> My Computer				<input type="checkbox"/> CBM.xls	550KB	Microsoft Excel-Tab	16:05:01 13:21
<input type="checkbox"/> Diskette A				<input type="checkbox"/> CBM.Reports.xls	550KB	Microsoft Excel-Tab	16:05:01 13:03
<input type="checkbox"/> (C:)				<input type="checkbox"/> CBM.transfer.xls	550KB	Microsoft Excel-Tab	16:05:01 13:07
<input type="checkbox"/> (D:)					550KB	Microsoft Excel-Tab	16:05:01 13:08
<input type="checkbox"/> Data							
<input type="checkbox"/> Recycler							
<input type="checkbox"/> Tmm_XXXX							
<input type="checkbox"/> CBA Calculator							
<input type="checkbox"/> CTM							
<input type="checkbox"/> COO							
<input type="checkbox"/> Pricing							
<input type="checkbox"/> S.G.S.							
<input type="checkbox"/> Sales Training							
<input type="checkbox"/> SIPLACE CBM							
<input type="checkbox"/> Projects							
<input type="checkbox"/> Test 2001-05-16-01							
<input type="checkbox"/> 1							
<input type="checkbox"/> Test 1							
<input type="checkbox"/> Test 2							
<input type="checkbox"/> Test 3							
<input type="checkbox"/> Test 4							
<input type="checkbox"/> So							
<input type="checkbox"/> SIPLACE CEMARCHIVE							

FIG. 3

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1																					
					Main																
2	Shift Schedule				SHIFT 1				SHIFT 2												
3					shift start	break 1 start	lunch start	break 2 start	shift end	shift start	break 1 start	lunch start	break 2 start	shift end	shift start	break 2 start	shift end	shift start	break 2 start	shift end	shift start
4	Monday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
5	Tuesday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
6	Wednesday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
7	Thursday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
8	Friday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
9	Saturday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
10	Sunday	14			7:00	7:00	7:00	13:00	15:00	15:00	15:00	20:00	21:00	21:00	21:00	21:00	21:00	23:00	23:00	23:00	23:00
11	shifts apply for model	0																			
12	initial offset	1																			
13	Only lunch break applies	0																			
14	Breaks apply for machines	0																			
15	Weeks per year	50																			
16	Days off per year	10																			
17	Hours per day	24.00																			
18	Hours per day/average	23.31																			
19	Hours per week	168.00																			
20	Hours per week/average	153.20																			
21	Hours per year	8166.00																			
22					1																
23					2																
24					3																
25					4																
26					5																
27					6																
28					7																
29					8																
30					9																

FIG. 4

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
31				12	7:00			12:00	13:00			15:00	15:00		20:00	21:00				23:00	23:00
32				13	7:00	8:00	8:15	12:00	12:30	15:00	15:15	19:30	19:30	20:00	20:15	0:00	0:30	3:00	3:15	7:00	
33				14	7:00			12:00	13:00			15:00	15:00		20:00	21:00				23:00	23:00
34				15																	
35				16																	
36				17																	
37				18																	
38				19																	
39				20																	
40				21																	
41				22																	
42				23																	

FIG. 4A

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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101090" 120E2860

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
31																				
32				4:00	5:00		7:00		→ Customer 1											
33									→ Customer 2											
34				4:00	5:00		7:00		→ Customer 3											
35									→ Customer 4											
36																				
37																				
38																				
39																				
40																				
41																				
42																				

FIG. 4C

[illegible]

101090-120E2860

T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
1													
2													
3													
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33													
34													

FIG. 5A

	AU	AV	AW	AX	AY	AZ
1						
2						Bare Board Loader
3						Buffer
4						Conveyor 1060
5						Conveyor 1590
6						Conveyor 2380
7						F4 x 2 / SPL
8						F4 x 3 / SPL
9						F5
10						F5 x 2 / SPL
11						F5 x 3 / SPL
12						Flip Station 180
13						HS-50
14						HS-50 x 2 / SPL
15						HS-50 x 3 / SPL
16						Last Lift
17						Magazine Buffer MB100
18						Magazine Buffer MB50
19						Magazine Loader ML02
20						Magazine Loader ML05
21						Magazine Unloader MLJ02
22						Magazine Unloader MLJ05
23						Printer pro-flow
24						Printer pro-flow temp control
25						Printer squeegee operation
26						Printer squeegee operation temp control
27						RX 261
28						RX 262
29						RX 331
30						RX 332
31						RX 411
32						RX 412
33						
34						

FIG. 5B

101090-120E/860

	AU	AV	AW	AX	AY	AZ
35				S-20		
36				S-23		
37				S-25		
38				Shuttle-1 lane to 2 lane		
39				Shuttle-2 lane to 1 lane		
40				Telescopic Gate 1G		
41				Turn Station 1S		

FIG. 5C

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
		Line																	
1		Database																	
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
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27																			
28																			
29																			
30																			
31																			
32																			
F4																			

FIG. 7

101090'120E4860

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
33	F4 x 2SPL	1042	1	1	2	60	1						450			163.20		680.00
34	F4 x 3SPL	1043	1	1	3	60	1						875			163.20		680.00
35	F5	1050	1	1	1	60	1						200			163.20		680.00
36	F5 x 2SPL	1082	1	1	2	60	1						450			163.20		680.00
37	F5 x 3SPL	1063	1	1	3	60	1						875			163.20		680.00
38	Flip Station 180	7580	1	1	0	60	1						200			163.20		680.00
39	HS-60	1500	1	1	4	60	1						400			163.20		680.00
40	HS-50 x 2SPL	1502	1	1	2	60	1						850			163.20		680.00
41	HS-50 x 3SPL	1503	1	1	6	60	1						1250			163.20		680.00
42	Last Lift	7300	0	0	0	60	1						100			163.20		680.00
43	Magazine Buffer MB100	7320	0	0	0	60	1						100			163.20		680.00
44	Magazine Buffer MB50	7310	0	0	0	60	1						200			163.20		680.00
45	Magazine Loader ML02	7600	1	1	0	60	1						200			163.20		680.00
46	Magazine Loader ML05	7610	1	1	0	60	1						200			163.20		680.00
47	Magazine Unloader MU02	7601	1	1	0	60	1						200			163.20		680.00
48	Magazine Unloader MU05	7611	1	1	0	60	1						200			163.20		680.00
49	Printer pro-flow	9003	1	1	1	60	1						200			163.20		680.00
50	Printer pro-flow temp control	9004	1	1	1	60	1						200			163.20		680.00
51	Printer squeegee operation	9001	1	1	1	60	1						200			163.20		680.00
52	Printer squeegee operation temp control	9002	1	1	1	60	1						200			163.20		680.00
53	RX 261	8001	1	1	1	60	1						700			163.20		680.00
54	RX 262	8002	1	1	1	60	1						700			163.20		680.00
55	RX 331	8003	1	1	1	60	1						700			163.20		680.00
56	RX 332	8004	1	1	1	60	1						700			163.20		680.00
57	RX 411	8005	1	1	1	60	1						700			163.20		680.00
58	RX 412	8006	1	1	1	60	1						700			163.20		680.00
59	S-20	1200	1	1	1	60	1						200			163.20		680.00
60	S-23	1230	1	1	1	60	1						200			163.20		680.00
61	S-25	1250	1	1	1	60	1						200			163.20		680.00
62	Shuttle - 1 lane to 2 lane	7100	0	0	0	60	1						100			163.20		680.00
63	Shuttle - 2 lane to 1 lane	7200	0	0	0	60	1						100			163.20		680.00
64	Telescopic Gate TG	7550	1	1	0	60	1						150			163.20		680.00
65	Turn Station TS	7570	1	1	0	60	1						200			163.20		680.00
66																163.20		680.00
67																163.20		680.00
68																163.20		680.00

FIG. 7A

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
33	F4 x2 / SPL	1042	1	1	3	60	1									163.20	680.00	
34	F4 x3 / SPL	1043	1	1	3	60	1									163.20	680.00	
35	F5	1050	1	1	2	60	1									163.20	680.00	
36	F5 x2 / SPL	1052	1	1	3	60	1									163.20	680.00	
37	F5 x3 / SPL	1053	1	1	3	60	1									163.20	680.00	
38	Filo Station 180	7560	1	1	0	60	1									163.20	680.00	
39	HS-50	1500	1	1	2	60	1									163.20	680.00	
40	HS-50 x2 / SPL	1502	1	1	4	60	1									163.20	680.00	
41	HS-50 x3 / SPL	1503	1	1	6	60	1									163.20	680.00	
42	Last Lift	7500	0	0	0	60	1									163.20	680.00	
43	Magazine Buffer MB100	7320	0	0	0	60	1									163.20	680.00	
44	Magazine Buffer MB50	7310	0	0	0	60	1									163.20	680.00	
45	Magazine Loader ML02	7600	1	1	0	60	1									163.20	680.00	
46	Magazine Loader ML05	7610	1	1	0	60	1									163.20	680.00	
47	Magazine Unloader MU02	7601	1	1	0	60	1									163.20	680.00	
48	Magazine Unloader MU05	7611	1	1	0	60	1									163.20	680.00	
49	Printer pro-flow	9003	1	0	1	60	1									163.20	680.00	
50	Printer pro-flow temp control	9004	1	0	1	60	1									163.20	680.00	
51	Printer squeegee operation	9001	1	0	1	60	1									163.20	680.00	
52	Printer squeegee operation temp control	9002	1	0	1	60	1									163.20	680.00	
53	RX 261	8001	1	1	1	60	1									163.20	680.00	
54	RX 262	8002	1	1	1	60	1									163.20	680.00	
55	RX 331	8003	1	1	1	60	1									163.20	680.00	
56	RX 332	8004	1	1	1	60	1									163.20	680.00	
57	RX 411	8005	1	1	1	60	1									163.20	680.00	
58	RX 412	8006	1	1	1	60	1									163.20	680.00	
59	S-20	1200	1	1	1	60	1									163.20	680.00	
60	S-23	1230	1	1	1	60	1									163.20	680.00	
61	S-25	1250	1	1	1	60	1									163.20	680.00	
62	Shuttle - 1 lane to 2 lane	7100	0	0	0	60	1									163.20	680.00	
63	Shuttle - 2 lane to 1 lane	7200	0	0	0	60	1									163.20	680.00	
64	Telescopic Gate TG	7550	1	1	0	60	1									163.20	680.00	
65	Turn Station TS	7570	1	1	0	60	1									163.20	680.00	
66																163.20	680.00	
67																163.20	680.00	
68																163.20	680.00	

FIG. 7B

101090-120E/860

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
69																163.20		680.00
70																163.20		680.00
71																163.20		680.00
72																163.20		680.00
73																163.20		680.00
74																163.20		680.00
75																163.20		680.00
76																163.20		680.00
77																163.20		680.00
78																163.20		680.00
79																163.20		680.00
80																163.20		680.00
81																163.20		680.00
82																163.20		680.00
83																163.20		680.00
84																163.20		680.00
85																163.20		680.00
86																163.20		680.00
87																163.20		680.00
88																163.20		680.00
89																163.20		680.00
90																163.20		680.00
91																163.20		680.00
92																163.20		680.00
93																163.20		680.00
94																163.20		680.00
95																163.20		680.00
96																163.20		680.00
97																163.20		680.00
98																163.20		680.00
99																163.20		680.00

FIG. 7C

09673061-060101

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																

FIG. 7D

101090*120E2860

S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
33		4080.00	8160.00		600	0			S25Cluster2_L1	S25Cluster2	Lift1				450
34		4080.00	8160.00		900	0			S25Cluster3_L1	S25Cluster3	Lift1				875
35		4080.00	8160.00		200	0			S25_L1	S25	Conveyor001				200
36		4080.00	8160.00		600	0			S25Cluster2_L1	S25Cluster2	Lift1				450
37		4080.00	8160.00		900	0			S25Cluster3_L1	S25Cluster3	Lift1				875
38		4080.00	8160.00		200	0			Flip_Station		Printermc				200
39		4080.00	8160.00		350	0			H550_L1	H550	Conveyor001				400
40		4080.00	8160.00		900	0			H550Cluster2_L1	H550Cluster2L	Lift1				850
41		4080.00	8160.00		1350	0			H550Cluster3_L1	H550Cluster3L	Lift1				1250
42		4080.00	8160.00		100	0			LastLift		Lift4				700
43		4080.00	8160.00		150	0			Buffer_Magazine100		B1				100
44		4080.00	8160.00		150	0			Buffer_Magazine50		B1				100
45		4080.00	8160.00		200	0			Magazine_Loader2		Printermc				200
46		4080.00	8160.00		200	0			Magazine_Loader5		Printermc				200
47		4080.00	8160.00		200	0			Magazine_Unloader2		Printermc				200
48		4080.00	8160.00		200	0			Magazine_Unloader5		Printermc				200
49		4080.00	8160.00		200	0			Printer		Printermc				200
50		4080.00	8160.00		200	0			Printer		Printermc				200
51		4080.00	8160.00		200	0			Printer		Printermc				200
52		4080.00	8160.00		200	0			Printer	Oven_2	Printermc				200
53		4080.00	8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
54		4080.00	8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
55		4080.00	8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
56		4080.00	8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
57		4080.00	8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
58		4080.00	8160.00		1400	0			Oven_1Lane	Oven_2	Oven_2001				700
59		4080.00	8160.00		200	0			S25_L1	S25	Conveyor001				200
60		4080.00	8160.00		200	0			S25_L1	S25	Conveyor001				200
61		4080.00	8160.00		200	0			S25_L1	S25	Conveyor001				200
62		4080.00	8160.00		100	0			Shuttle2_2		Shuttle				100
63		4080.00	8160.00		100	0			Shuttle2_1		Shuttle				100
64		4080.00	8160.00		150	0			ConrTG		conrG_2001				150
65		4080.00	8160.00		200	0			Turn_Station		Printermc				200
66		4080.00	8160.00												
67		4080.00	8160.00												
68		4080.00	8160.00												

FIG. 7E

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
69	4080.00			8160.00												
70	4080.00			8160.00												
71	4080.00			8160.00												
72	4080.00			8160.00												
73	4080.00			8160.00												
74	4080.00			8160.00												
75	4080.00			8160.00												
76	4080.00			8160.00												
77	4080.00			8160.00												
78	4080.00			8160.00												
79	4080.00			8160.00												
80	4080.00			8160.00												
81	4080.00			8160.00												
82	4080.00			8160.00												
83	4080.00			8160.00												
84	4080.00			8160.00												
85	4080.00			8160.00												
86	4080.00			8160.00												
87	4080.00			8160.00												
88	4080.00			8160.00												
89	4080.00			8160.00												
90	4080.00			8160.00												
91	4080.00			8160.00												
92	4080.00			8160.00												
93	4080.00			8160.00												
94	4080.00			8160.00												
95	4080.00			8160.00												
96	4080.00			8160.00												
97	4080.00			8160.00												
98	4080.00			8160.00												
99	4080.00			8160.00												

FIG. 7F

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

1	board #	1	2	3	4	5	6	7	8	9
2	board name									
3	second side +									
4	components per panel									
5	up to 18.7 x 18.7									
6	up to 32 x 32									
7	up to 55 x 55									
8	boards per panel									
9	components per board									
10	board for simulation									
11										
12	# name									
13	1 7300 Buffer	999	999	999	999	999	999	999	999	999
14	2 7511 Conveyor 1060	999	999	999	999	999	999	999	999	999

FIG. 8

	N	O	P	Q	R	S	T	U	V	W	X	Y
1												
2	10	11	12	13	14	15	16	17	18	19	20	21
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13	999	999	999	999	999	999	999	999	999	999	999	999
14	999	999	999	999	999	999	999	999	999	999	999	999

FIG. 8A

	Z	AA	AB	AC	AD	AE	AF	AG	AH
1									
2	22	23	24	25	26	27	28	29	30
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13	999	999	999	999	999	999	999	999	999
14	999	999	999	999	999	999	999	999	999

FIG. 8B

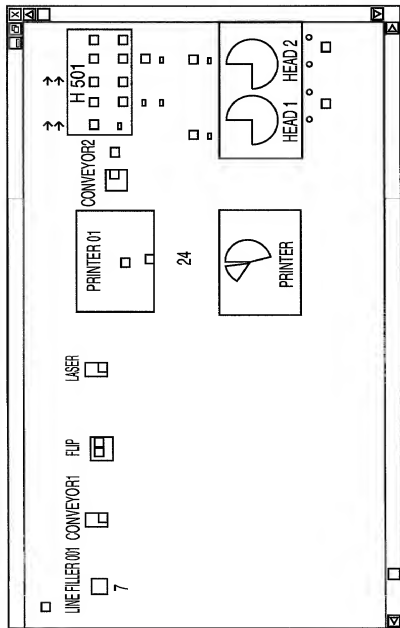


FIG. 9

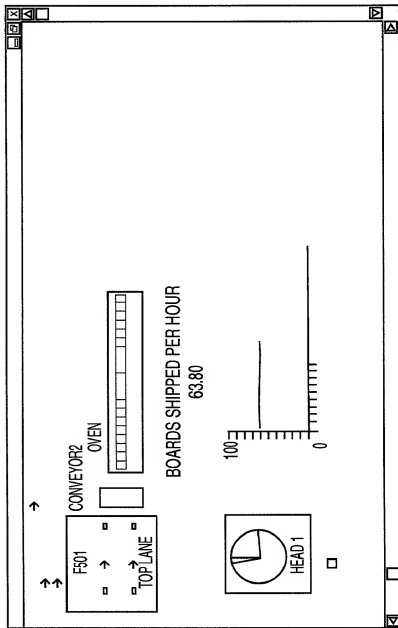


FIG. 9B

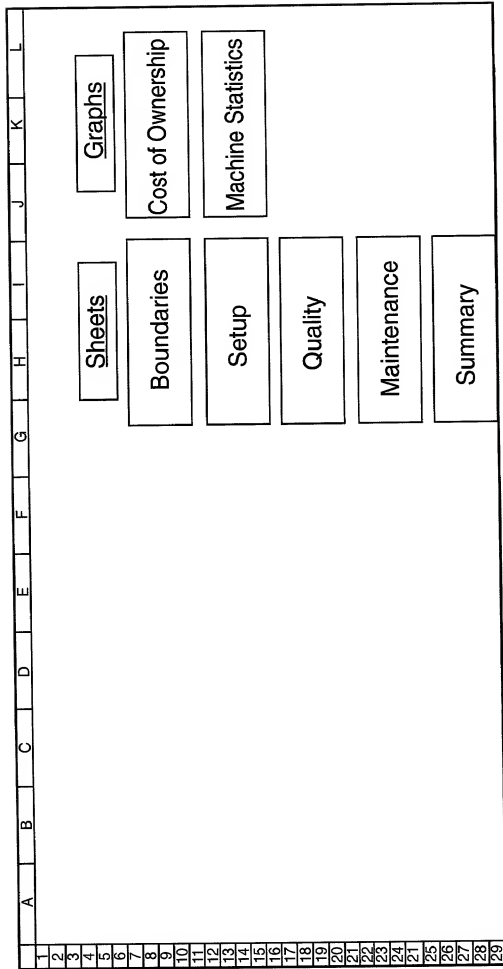


FIG. 10

	A	B	C	D	E	F	G
1	Boundaries						
2	Project	Test1 31/March 2001					
3	Date						
4							
5		default		project			
6	Financial						
7	Currency (Input)			0			
8	Currency (Output)			0			
9	Exchang ratio (In/Out)			0.00			
10	Depreciation			0.00%			
11	Interest Rate			0%			
12	Labor			0			
13	Operator			0.00			
14	Supervisor			0.00			
15	Maintenance			0.00			
16	Rework			0.00			
17	Utilities			0			
18	floor space (year/sqm)			0.00			
19	electricity (kWh)			0.00			
20	Nitrogen (???)			0.00			
21	air (???)			0.00			
22							
23							
24							
25							
26							

Main

FIG. 11

	A	B	C	D	E	F	G
1	Setup						
2							
3	internal setup						
4	Operator labor per hour		0.00				
5	setup changes every x h						
6	# of setup changes per week						
7	setup changes per year						
8	time per setup						
9	setup time per year						
10	internal setup costs						
11							
12	external setup						
13	external setup labour per hour						
14	external setup						
15	external setup per year						
16	investment for external setup						
17							
18							
19	external setup costs per year						
20							
21	setup costs						

Main

FIG. 12

	A	B	C	D	E	F	G	H
1	<u>Quality</u>							
2	material costs per board		0					
3	DPM							
4	components per board	500						
5	first pass yield	100%						
6	rework costs per board to rework		0					
7	scrap costs per board to rework							
8	rework costs per year	#DIV/0!	0					
9	scrap costs per year	#DIV/0!	0					
10								
11	quality costs per year	#DIV/0!	0					
12								
13								
14								
15								
16								
17								
18								

Main

FIG. 13

	A	B	C	D	E	F	G	H	I
			minutes	# of workers	who does maint.	downtime factor	line operator (h)	maint. team (h)	downtime (h)
1	Maintenance								
2	line workers			0					
3	maintenance per shift (min)				1	100%	0.00	0.00	#DIV/0!
4	maintenance weekly (min)				1	100%	0.00	0.00	#DIV/0!
5	maintenance monthly add. (min)				2	100%	#DIV/0!	#DIV/0!	#DIV/0!
6	maintenance quarterly add (min)				3	100%	0.00	0.00	#DIV/0!
7	maintenance every x h add (min)				3	100%	0.00	0.00	#DIV/0!
8	maintenance time calculated (h)	10,000					#DIV/0!	#DIV/0!	0
9	labor costs						#DIV/0!	#DIV/0!	
10	maintenance costs per year								
11								#DIV/0!	0.000000 €
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

Main

FIG. 14

	A	B	C	D	E	F	F	H	I	J	K
Cost of Ownership											
	Cost per year			Cost per board			Capacity				
1										hours available per year	0.00
2	Investment				0	0				Internal setup	#DIV/0!
3	Investment		%		0	0				maintenance	#DIV/0!
4	spareparts		%		0	0				quality	
5	service				0		#DIV/0!	0	####	technical availability	
6										hours total	#DIV/0!
7											
8	Labor									boards per hour	83.56
9	Operations			#DIV/0!	0					boards per shift	#DIV/0!
10	Supervisor			#DIV/0!		0	#DIV/0!	0	####	boards per week	#DIV/0!
11										boards per year	#DIV/0!
12											
13	Misc.				0						
14	Setup			#DIV/0!	0						
15	Maintenance			#DIV/0!		0	#DIV/0!	0	####		
16											
17											
18	Utilities										
19	Floor/space		sqm	0	0						
20	Electricity		kw		0						
21	Nitrogen		cbm/h		0						
22	Air		l/min		0						
23				#DIV/0!		0	#DIV/0!	0	####		
24											
25	Quality										
26	rework costs per year			#DIV/0!	0						
27	scrap costs per year			#DIV/0!		0	#DIV/0!	0	####		
28											
29											
30											
31	Costs per year			#DIV/0!	0	#DIV/0!					

FIG. 15

101090-120E/860

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2														
3														
4														
5														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														

UTILITIES 9152

QUALITY

MISC 13209

LABOR
53658

INVESTMENT
127838

FIG. 16

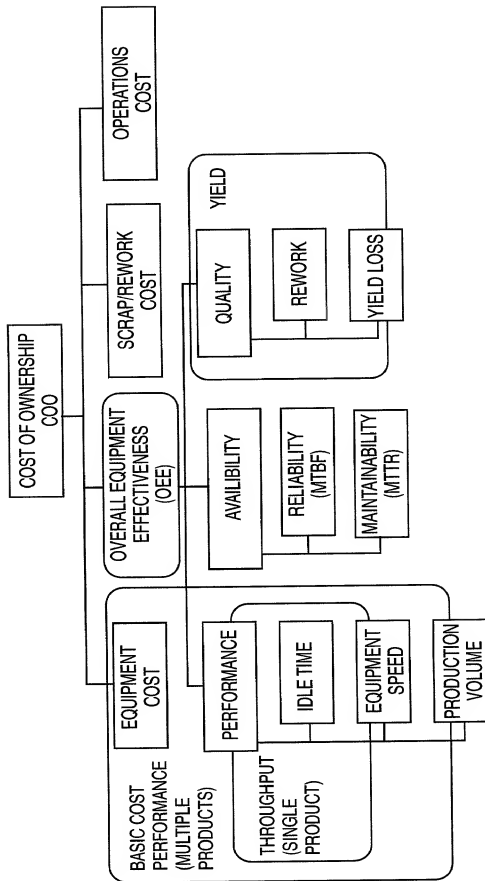


FIG. 16A

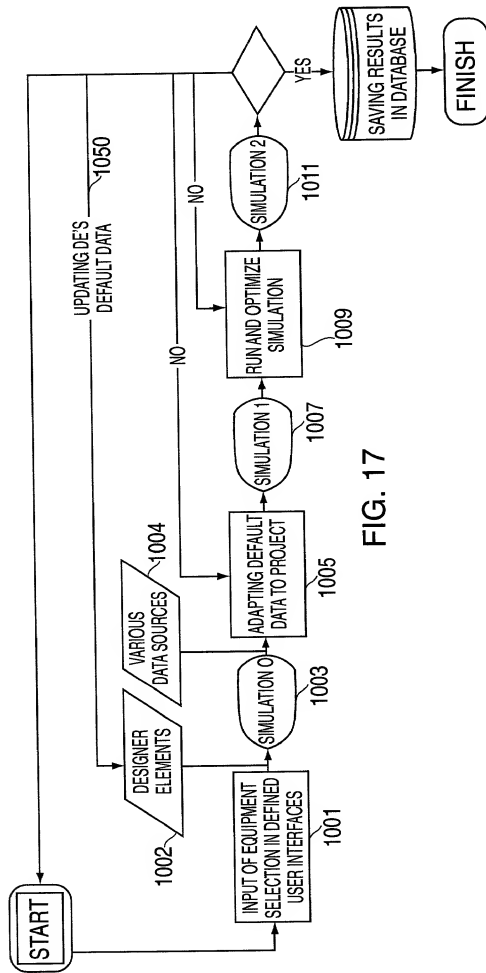


FIG. 17

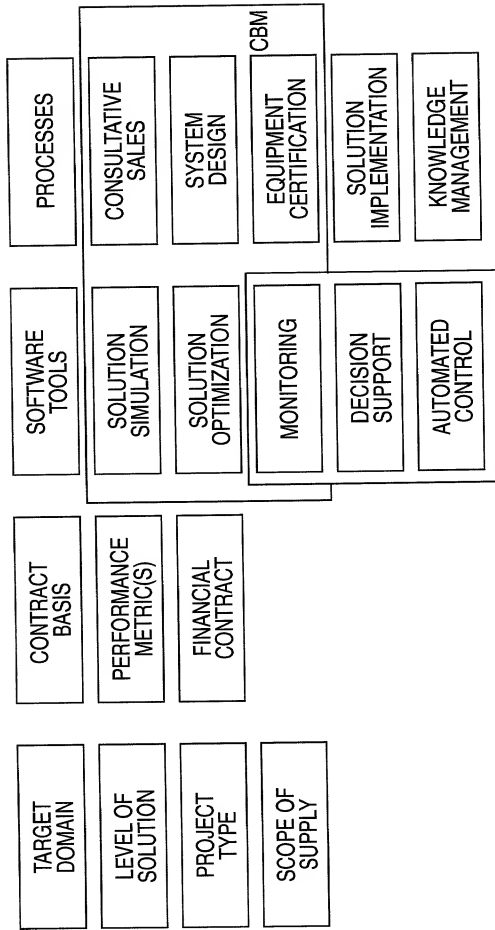


FIG. 18

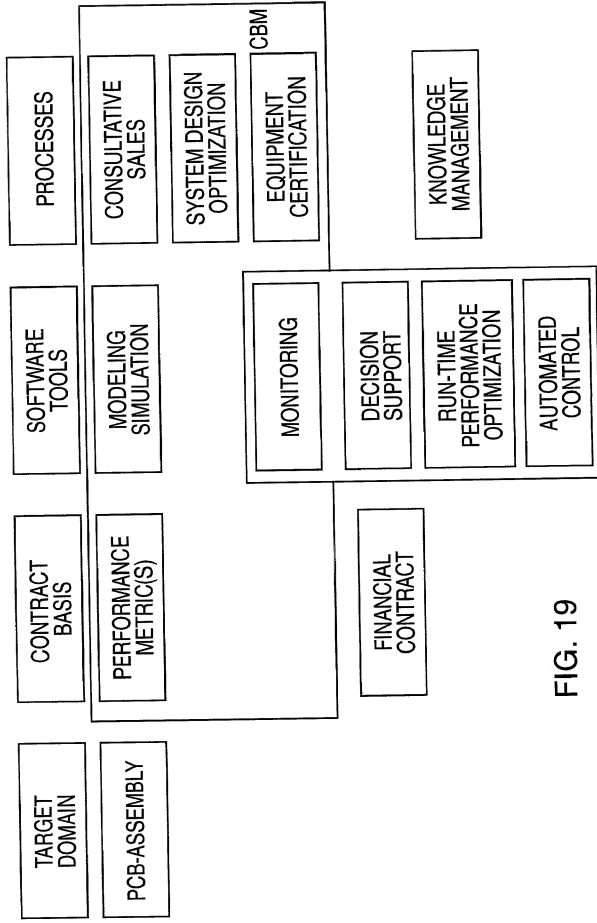


FIG. 19

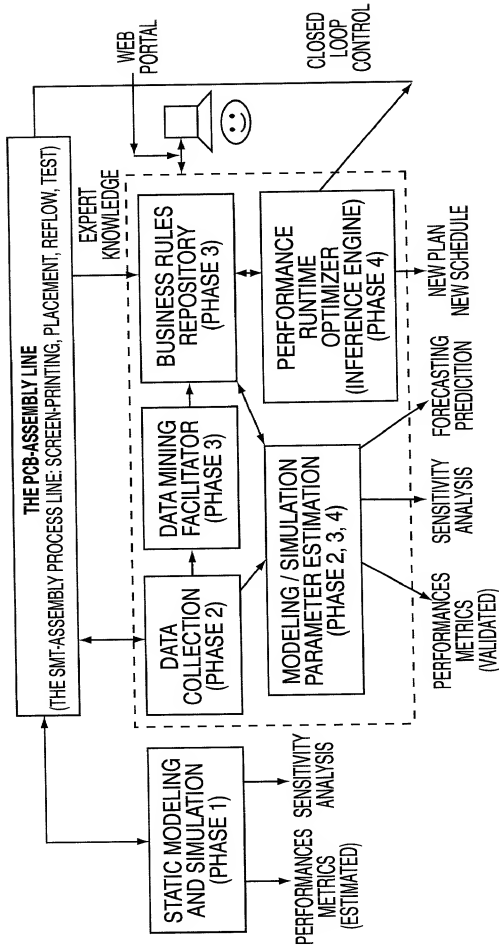


FIG. 20

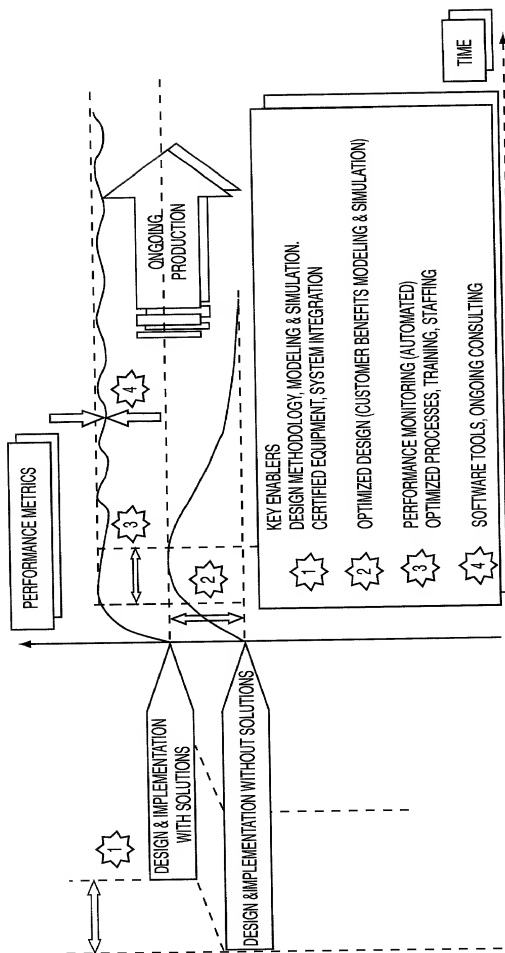


FIG. 21

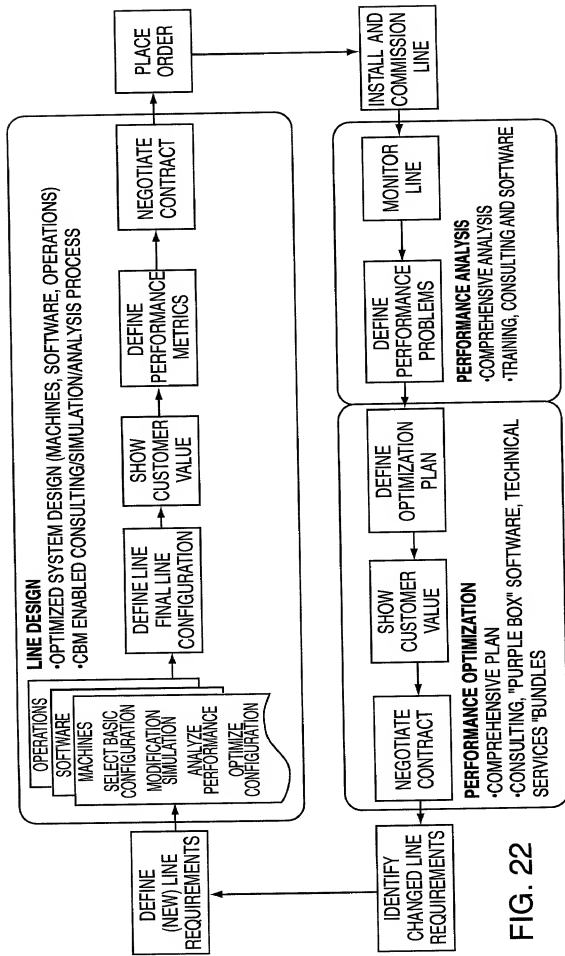


FIG. 22

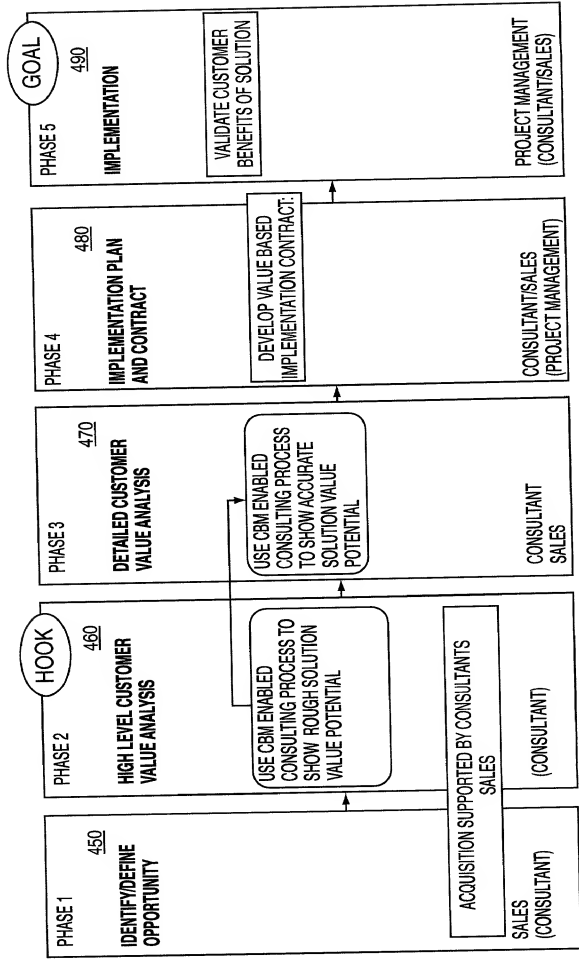


FIG. 23

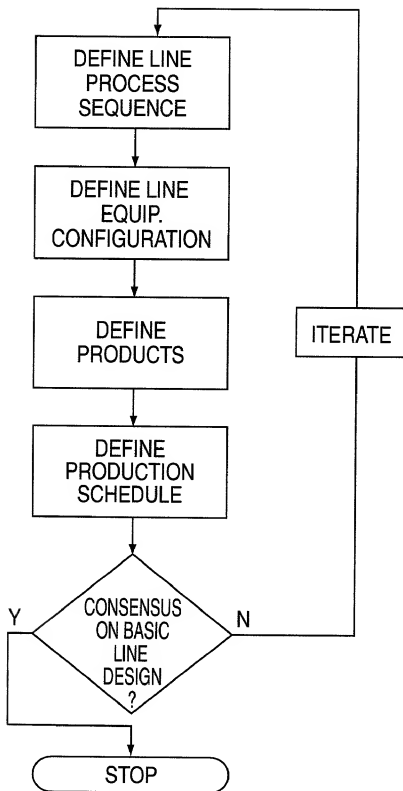


FIG. 24

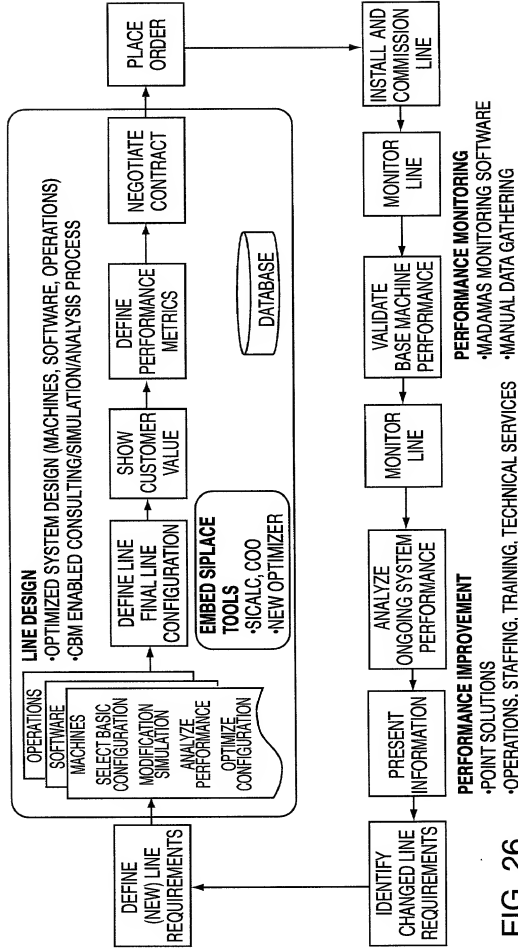
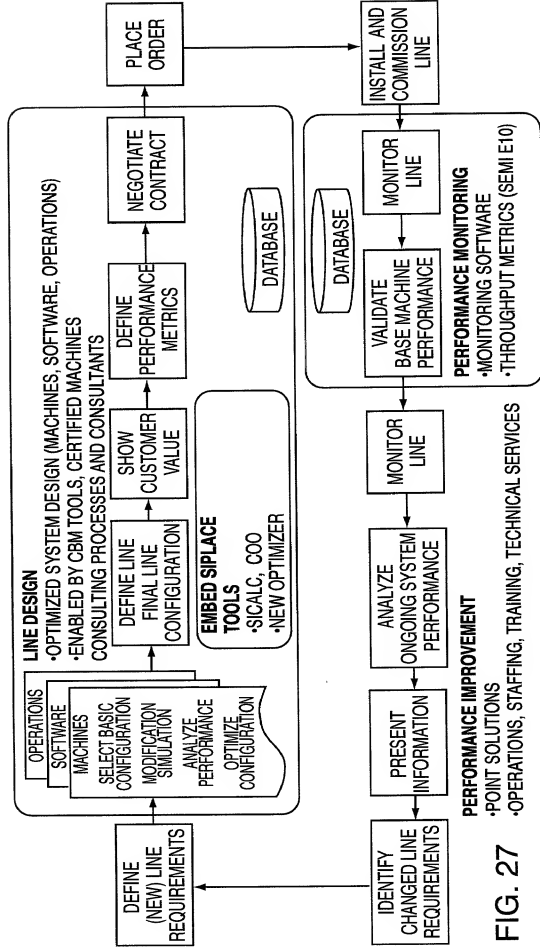


FIG. 26



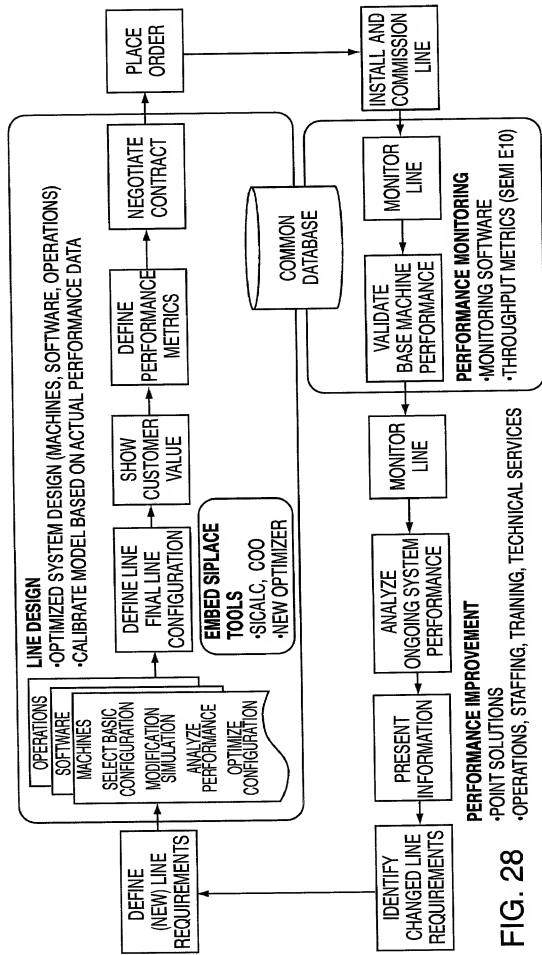


FIG. 28

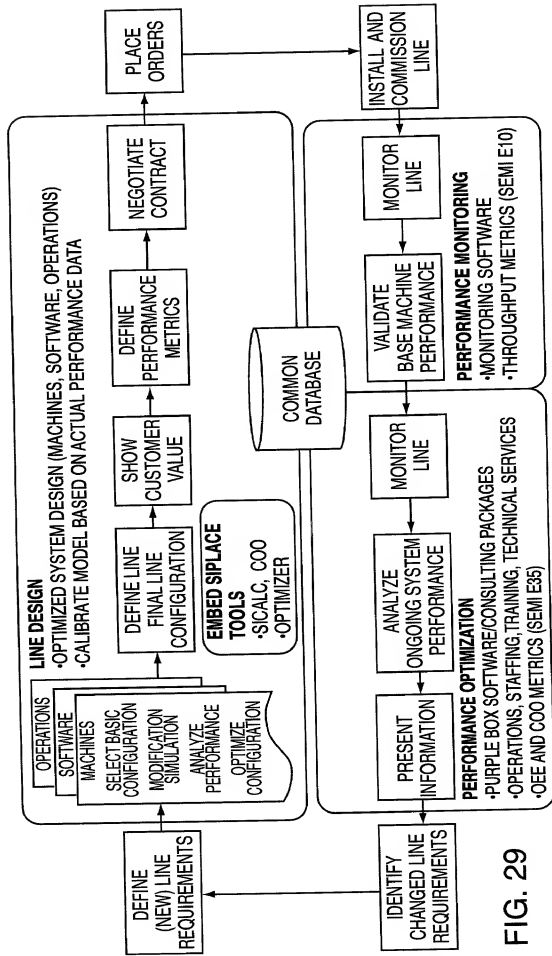


FIG. 29

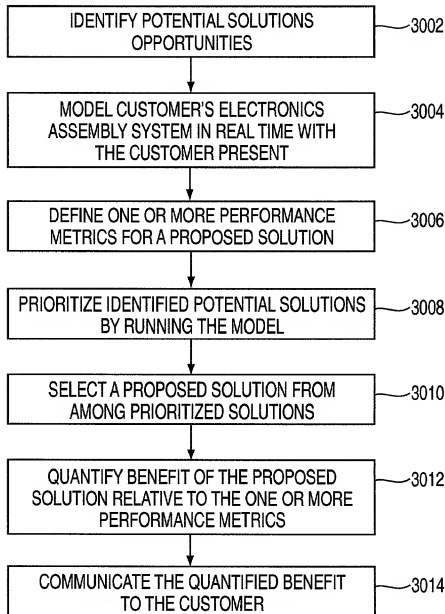


FIG. 30

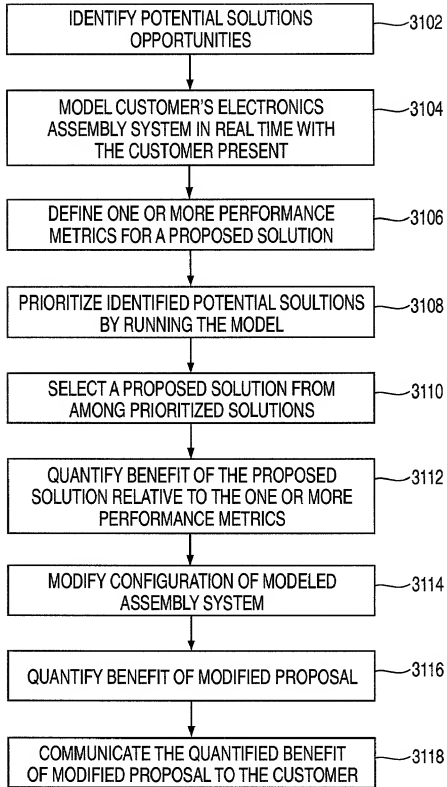


FIG. 31

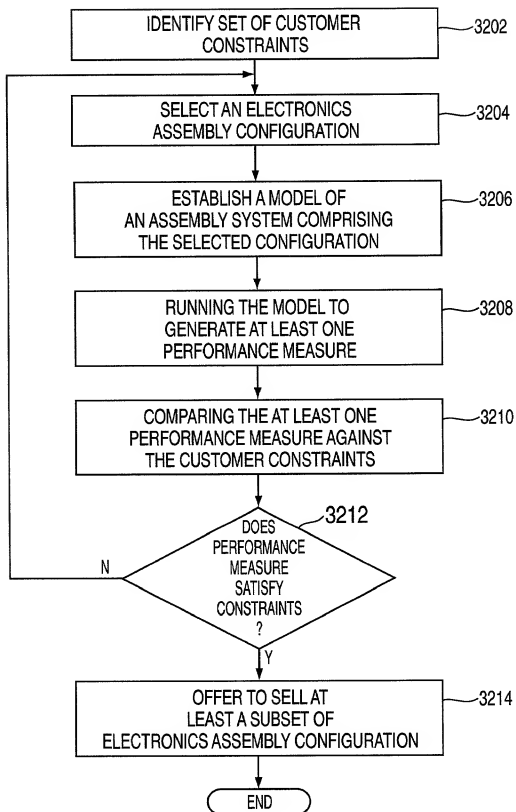


FIG. 32

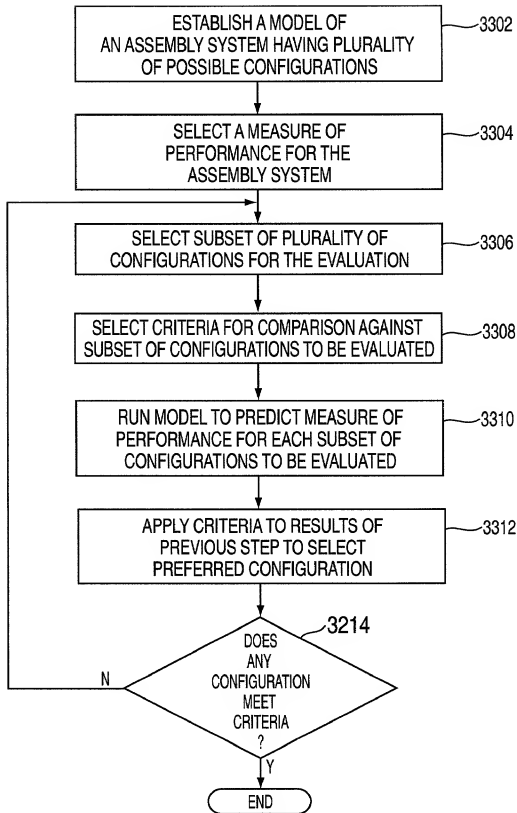


FIG. 33

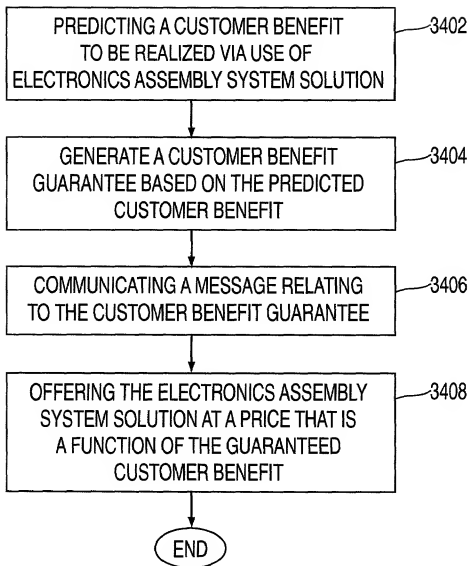
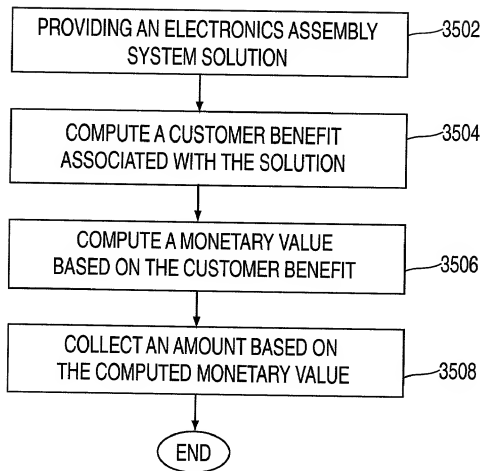


FIG. 34

**FIG. 35**

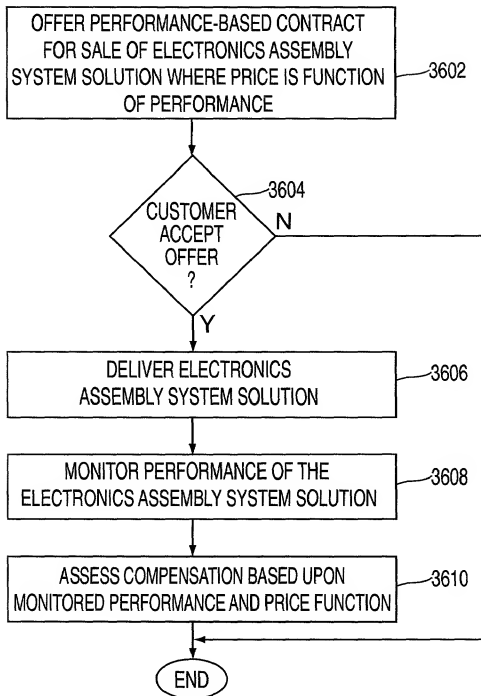


FIG. 36